WHAT IS CLAIMED IS:

1. A system for shadow-free 3D and 2D measurements of an object, comprising:

an image acquisition unit,

an FMI set-up with a first lighting, and

at least one constant second lighting,

wherein said system comprises a single grid located in an axis of projection.

2. The system according to claim 1, wherein said system allows taking benefit from said first and said at least one second lighting in a reconstructed image combining features of the object, the object being visible under said constant second lighting while in shadow regions created by said first lighting.

3. The system according to claim 1 or 2, wherein said at least one constant second lighting is a 2D lighting produced between the object and the image acquisition unit and said first lighting is a Moiré slanted lighting.

4. The system according to anyone of claims 1 to 3, wherein said first lighting and said constant second lighting remain switched on during an entire acquisition time of the object.

5. The system according to anyone of claims 1 to 4, wherein said at least one constant second lighting is selected in the group comprising an ambient light, a ring light, a constant coaxial lighting, and a combination thereof.

6. The system according to claim 1, wherein said first lighting and said at least one constant second lighting are used successively to perform successive surface inspections of the object.

7. A system for shadow-free 3D and 2D measurements of an object combining in a single FMI set-up a Moiré 3D lighting with at least one simultaneous external constant illumination to obtain a reconstructed image comprising features located in shadow zones created by said Moiré 3D lighting, wherein relative intensities of said Moiré 3D lighting and of said at least one external illumination respectively are selected to allow a 2D detection and 3D measurements.

8. A method for shadow-free 3D and 2D measurements of an object, comprising the acts of:

providing a first lighting source illuminating the object at an angle through a single grid located in an axis of projection;

providing at least one second external constant lighting source illuminating the object;

acquiring at least 3 phase-shifted images with an image-acquisition unit;

obtaining a reconstructed image taking into account both the first lighting source and the at least one second external constant lighting source; and

analyzing the reconstructed image.